Redefining the Role of Coders: The Impact of AI on Software Developers

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Introduction

Technology has made huge strides over the years. We have gone from having one massive computer which was 15 meters long in the 1900s to being able to keep an 8-inch computer in our pocket in the form of smartphones. As humans, we have tried to find ways to make our lives easier and technology has been the tool for that. In recent years, Artificial Intelligence has been a hot topic and has been in the works. Companies such as IBM have invested in the research and development of AI and it's caught the attention of the world. Various software such as ChatGPT, Face Recognition, Siri, and other Digital Assistants have made people's lives easier. There are many programmers and engineers who are the backbone of these recent advancements in technology. Sometimes they don't even get the credit they deserve as it usually goes to the company that actually released the product. Now on top of that, the way AI has advanced, it's able to do tasks that a normal human being would do on a daily basis. Robots are able to clean the floors, there are stations in markets and stores where customers can just self-check out on a machine rather than going to an actual cashier. This can then develop into the problem of job loss as it goes on. As of right now, only a handful of jobs are at risk but in the near future, coders might fall under that radar. With this being said, I am keen on learning more about how AI can pose a threat to existing software programmers. The jobs of coders have definitely taken a turn ever since AI has been introduced to the world. Probably, in the next 20 years by the year 2040, AI will have the capacity to do most human tasks with the way it is rising right now. With this, the way forward for programmers is to feed Artificial Intelligence and work on making it better. With the rise of AI, it could pose new opportunities for the economy to grow exponentially, but unemployment could harm the economy as well which makes it even more important to look at AI technology and job loss through the telescope of the economy. This then

poses the question: Would the loss of coders affect the job market and therefore the economy? Could be possible. So, is that really the way to go? It's yet to be seen.

The article "How the Unemployment Rate Affects Everybody." written by Elvis Picardo gives valuable insight into the economic system and how the little things matter in society. In this article, Picardo talks about the unemployment rate in the U.S. and how it affects families and society as a whole. He also talks about how having unemployed workers impacts the economy overall since the consumption is less, therefore products and services aren't utilized properly. It mentions how when the economy is going down, one of the main focuses shifts toward unemployment, signifying its value. Due to the fact that unemployment is a possibility for coders and programmers with the introduction of Artificial Intelligence, this frame that this article takes up is relevant and can be applied. What challenges can unemployment amongst coders pose to the economic system?

What is AI and How Can it Potentially Affect Programmers?

Artificial Intelligence is the branch of computer science that deals with creating intelligent machines that can perform tasks that typically require human intelligence, such as visual perception, speech recognition, decision-making, and language translation. Programmers have played a key role in developing and advancing AI technologies. They have created algorithms and models, and developed software applications and tools that enable machines to learn and make decisions based on data. In a way, it's feeding AI the human way of thinking to improve its decision-making and efficiency. These ideas are explored in the articles "Will Artificial Intelligence Replace Programmers?" and "Robots and Ai Taking over Jobs: What to Know about the Future of Jobs." written by Ashwin Joy and Mike Thomas respectively. In these articles, concepts such as Machine Learning, Strong AI and Weak AI, Automation, and

Human-Machine Collaboration are all relevant and explained thoroughly and it makes understanding the concept of Artificial Intelligence easier. Both articles have slightly different approaches in the way they address AI but they unite when they talk about the job force, Ashwin Joy's article focuses more on the IT field and Mike Thomas' article can be seen as more general but they complement each other well. Ashwin Joy talks about how "the need for application developers has increased significantly" since "digitization is taking place in all areas of life and work – after all, someone has to develop the AI, control it, and set the framework and data" (Joy). The way that the world is moving, most jobs will now focus on developing AI and pushing it out to the world. The demand for software developers is going to decline. This basically narrows down career choices for aspiring computer scientists. Programming may soon be off the table and the only choices they have would be to feed the AI machines. Thomas' view on this issue is also similar when he mentions that even though "some workers may be displaced, new jobs will be created in areas like data science, machine learning, and robotics" (Thomas). AI creates a new path for workers to get jobs so even if they lose their jobs in their respective fields, they would not need to necessarily worry if they can pick up the new skill. However, the challenge with this is that not everyone can easily pick it up and it will be harder for some than others. From these two articles, it can be concluded that AI will need a strong workforce to keep it on track and for its improvements. This would mean that workers from other industries as well as the technology industry such as programmers would need to shift their focus towards the development of AI.

It's not yet to be seen whether or not Artificial Intelligence is actually ready to take over the jobs of programmers. It has been seen that AI has a lot of potential and has already achieved a lot of things through software such as ChatGPT. However, having perfect human intellect is

something that AI is still yet to develop and in order to replace a full-fledged programmer, it would need to have embodied the brain of a human essentially. This is where the concept of Weak AI and Strong AI comes into the picture. Weak AI, also referred to as narrow AI, is AI that is only designed to do particular tasks, such as analyzing data and organizing it, recognizing speech, and solving basic mathematical problems. However, strong AI, or artificial general intelligence, is AI that possesses human intelligence, can make decisions, and will be able to have cognitive skills, as well as the ability to multitask. Ashwin Joy believes that coders can only be replaced "only if we can create the so-called strong artificial intelligence (artificial general intelligence) – that is, one that fulfills the assumption that certain forms of artificial intelligence have all the properties available to the human mind" (Joy). People may be worried that AI can take away the jobs of software developers but that is not the case. Yes, AI has the potential to do so but not just yet. The only way it could be made possible is if the programmers feed information into AI to a point where it can take over, which is ironic in a sense. The article "CHATGPT and Software Development." by Isaac Sacolick shares similar views when it comes to whether or not AI is ready to take over software developers. The article uses ChatGPT, the popular chatbot on the market as its example. In this, Sacolick writes how "for now, generative AI can help fill gaps and accelerate implementing solutions within the software development life cycle, but we will still need developers to drive appropriate experiences"(Sacolick). With the use of AI-powered language models such as ChatGPT, software developers can improve natural language processing in aspects of the SDLC (Software Development Life Cycle), however, software developers still have a role to play. Using software such as ChatGPT can actually aid software developers and help them fill up gaps and issues, but the coder will still have a major role to play, meaning that AI hasn't fully developed to take over from humans. In fact, there are

already many aids and tools that modern-day programmers use such as advanced compilers. Ashwin Joy, when discussing the prospects of AI taking over coders' jobs, brings up a valuable point as to how "programmers no longer write code by hand. They are already using a variety of intelligent tools that allow them to automate their compilation efforts. And that's what AI does: It supports programmers. But a future in which artificial intelligence will be able to make all the right decisions to develop software from scratch or to interpret the commercial value of each feature is still extremely far away" (Joy). The days when programmers write code all by themselves are long gone. They now have various tools that help them write their code such as compilers that use already built-in software to help them, similar to what AI can do. This quote talks about the positive that AI can give to the world of programming. It will make the jobs of programmers easier. However, there might still be some issues with such tools. According to the article "AI for Software Developers: A Future or a New Reality?" by Nikita Povarov, she talks about an AI software put out by GitHub and how the code it produces "are often verbose and hard to read" and "verbose and unclear machine-generated programs could make the already difficult "understanding" (code) part even more difficult" (Povarov). For context, Github CoPilot is a software similar to ChatGPT but directed mainly towards coding. By using advanced compilers and software such as ChatGPT, programmers' lives can be made easier, but it might be too early to conclude that AI can actually take over the jobs of coders, especially if it can't put out effective solutions.

The Economy and AI: The Good and Bad

The economy plays a major role in how the world is run. Everything depends on money, especially in the capitalistic economy that many countries adopt. The saying goes "money can't buy you happiness" but money can decide a lot of things in an individual's life. Relating that to

the technology industry, it's important to analyze the effects that Artificial Intelligence can have on the economy as a whole. Considering how most companies use a capitalistic approach, there are two sides to how AI can affect the economy: the good and the bad. AI can bring a lot of benefits to the economy. The article "Notes from the AI Frontier: Modeling the Impact of AI on the World Economy." by Jacques Bulghin predicts that "AI has the potential to deliver additional global economic activity of around $13 trillion by 2030, or about 16 percent higher cumulative GDP compared with today" (Bughin). AI is predicted to bring a lot of money into the economy. AI can also bring higher reputations for companies as they can be considered more advanced since they use AI. In fact, it is also predicted that "By 2030, the average simulation shows that some 70 percent of companies might have adopted at least one type of AI technology but that less than half will have fully absorbed the five categories" (Bughin). This would mean that AI will most likely establish itself in society and the economy, meaning that it's beneficial to the economy since most companies will use it. However, it isn't clear as to what capacity they will utilize AI. Companies do have the incentive to use AI to help them since there are "five broad categories of AI: computer vision, natural language, virtual assistants, robotic process automation, and advanced machine learning. Companies will likely use these tools to varying degrees" (Bughin). Artificial Intelligence can benefit companies in more ways than one. For instance, investments in Artificial Intelligence can help companies reduce labor costs in the long term. The article "How capitalism causes unemployment" published by the journal *Workers Power*, talks about how in order "to save on wages, capitalists try to out-compete each other by investing in machinery so that they are less reliant on a large workforce" (Workers Power). Businesses in a capitalist system want to maximize profits, which frequently necessitates cost-cutting measures like salary reductions, and even firing workers. Capitalists make

investments in machinery and technology to boost productivity and lower their reliance on human labor in order to stay competitive. Because fewer workers are needed to operate the machines, this trend may result in increased unemployment, but it may also increase profits for the capitalists. The quote here highlights the conflict between capitalists' desire for profit and the requirements of workers who depend on their jobs for a living. Artificial Intelligence can do companies a favor by taking the place of workers and will result in an overall profit for the company. Artificial Intelligence also has the scope of preventing human error, if it's trained well enough. An article titled "How Artificial Intelligence Data Reduces Overhead Costs for Organizations" published by *Appen* talks about the various ways AI can help reduce costs such as labor costs for businesses. An important concept that was highlighted was the idea of human error and how "unfortunately, human mistakes can cost companies a lot of money. Whether the mistake is a misplaced number on an accounting sheet or an unmaintained piece of equipment, human forgetfulness and humanness cost money. Businesses that implement AI can limit the number of human errors happening at their company." (Appen). This would make sense as to why it is predicted that about 70 percent of companies will look to adapt various types of AI technology by the year 2030, as stated earlier by Jacques Bughin. If businesses were to implement AI technologies, it would decrease labor costs which would then return positive revenue and profits, which would be beneficial to both the corporate and the economy.

Just like how AI can bring benefits to the economy it might also do some harm. The rise of AI can mean that a certain group of people will be put at risk. For people who won't be able to adapt to it and lose their jobs, they won't be able to contribute to the economy. Every person in the workforce is valuable to the economy. Unemployment can dent the economy. In a capitalist economy, the chances of unemployment are higher as compared to any other form of economy.

According to *Workers Power*, this comes down to the fact that “unemployment is a consequence of the endless drive of capitalism towards increasing profits” and that during an industrial cycle, “capital draws more labourers into the workforce during the boom period, until the inevitable crisis occurs and workers are thrown out of their jobs”(Workers Power). With mass unemployment waiting to happen, how does this impact the economy overall? The article “How the Unemployment Rate Affects Everybody.” by Elvis Picardo gives a good perspective on how unemployment affects the economy as a whole. Even though AI is not in this article’s focus, the concepts in this article can definitely be applied. The article states that “unemployed workers consume far less than those with a steady income because they have less discretionary income” (Picardo). This means that workers who are unemployed tend to be more careful with the way they consume to save money. Unemployment doesn’t only affect the workers who were laid off. It impacts the economy as a whole since there will be products that won’t be consumed as quickly or as much since unemployed workers would go on budgets and would think twice before buying something to ensure that they save as much money as they can before they get a new job. If someone were to lose their job to AI, this could then be applied to them since they would work on a budget and spend less money, meaning that there would be inequality in the economy. To apply this to the tech industry, programmers who could potentially lose their jobs to AI won’t spend money either, and might not buy phones or other pieces of new technology, which affects the tech industry directly in a monetary way. This would then actually affect the people who are still in the workforce. Picardo believes that “unemployed workers also lose their purchasing power, which can lead to unemployment for other workers, creating a cascading effect that ripples through the economy. In this way, unemployment even impacts those who are still employed” (Picardo). Unemployed workers can’t buy what they would usually buy, due to

them being circumspect of the money they may or may not have. This in turn would affect the workers behind whatever product goes unsold. Every worker in the workforce is essential in order for the economy to thrive. It would be hard to imagine how one worker can impact another but if thought about, it makes sense. This brings back the question of whether or not AI should really be allowed to take over the current workforce since it can possibly harm the economy more than benefit it.

What Skills Will Coders Need to Develop to Stay Ahead?

With the potential that AI possesses, there are skills that coders must develop to stay on top of AI. Although AI might not be able to replace a skillful coder, it can still do various tasks that a basic coder can do. Coders would then need to learn new skills or polish their existing ones so that their knowledge can be considered unique. Upcoming coders would also need to shift their education to focus more on AI development and concepts such as Machine Learning and Data Science and Analytics. Machine learning entails developing software or models whose performance can be improved via experience. Its algorithms are made to learn from data, spot patterns, and form judgments or predictions rather than relying on explicit instructions from a programmer.

Why would this be helpful to AI? Well, AI relies heavily on machine learning since it allows AI systems to learn from data and develop over time. AI systems can analyze massive volumes of data, spot patterns, and make judgments or predictions in real time by employing machine learning algorithms. Machine learning algorithms, for instance, are used by self-driving cars to assess sensor data from their environment, identify items like other cars, pedestrians, and traffic signs, and decide how to safely navigate the road. The article “Why Is Machine Learning

Important?" by the CSU Global organization highlights the importance of Machine Learning in the modern day and age. It states that "anywhere that AI systems are being used, machine learning experts will be needed to help improve the results of that AI technology" (Global). By having coders who are experts in machine learning, the process of developing AI to the best of its abilities becomes easier. It's essential that coders also stick with and polish skills that they already have. Some examples of this would be communication skills, management skills, and decision-making skills. Mike Thomas states in his article that "having solid verbal and written communication like listening, reading emotions, asking questions, writing clearly and structuring cogent arguments devoid of ambiguity" (Thomas). These skills are essential in practically every area of life, including relationships, academics, and in this case, careers. We may be able to comprehend the viewpoints, requirements, and issues of others by using effective listening and reading skills. Additionally, it helps us respond appropriately and participate in worthwhile conversations and helps avoid any conflict or issues in a work environment. Blake Morgan at Forbes shares a similar viewpoint in his article "Why Every Employee At Your Company Should Have Communications Training" where he emphasizes the importance of communication in a workplace. He believes that "communication is at the core of every business—even an employee who sits by themselves still likely communicates with people, either on the phone or via email. Being able to get information across clearly makes work more efficient, understandable, and less frustrating" (Morgan) and his thinking aligns with Mike Thomas' when it comes to this concept. While skills such as Machine Learning and Data Management will help workers when AI does come around, skills such as communication and decision-making will help them stay ahead of AI.

Conclusion: Tying everything together

Artificial Intelligence is meant to make the lives of humans easier. Many technologies such as cleaning robots, voice recognition devices, chatbots (ChatGPT), and software such as Github CoPilot have been put in place to help individuals. However, it's not safe to conclude that AI can actually take over from humans. Especially in the IT Industry, there is still much development yet to be done in order for AI to reach the "Strong AI" state. As of right now, it seems to be clear that AI can do a limited amount of tasks and it should therefore be used to aid coders, not replace them.

Looking at the economic standpoint, AI does pose a good side and a bad side, depending on how it's looked at. By introducing AI into a capitalistic economy, it can then stake a claim for mass unemployment if companies find AI to be useful, which they most likely will. If workers were to lose their jobs, this could potentially bring the economy down since they would lose their "purchasing power" as consumers. However, AI can benefit companies and increase their revenue and profits, which then helps stabilize the economy in a sense. There are always going to be pros and cons when it comes to this. Personally, I feel that a human workforce would be more efficient and effective due to communication and decision-making skills. There's no harm in using Artificial Intelligence to help run a business but getting rid of workers because of labor costs would not be ideal.

It's important to remember that technology can fail at times and it is not perfect. Humans are the ones who developed technology and are the masterminds behind it. So wouldn't that mean that they are intellectually higher regardless? This then makes me conclude that Artificial Intelligence hasn't reached the capacity where it can actually take over from Software Developers yet, so their future is safe for now at least.

Works Cited

Appen. "How Artificial Intelligence Data Reduces Overhead Costs for Organizations." *Appen*, 3 Mar. 2022, https://appen.com/blog/how-artificial-intelligence-data-reduces-overhead-costs-for-organizations/#:~:text=AI%20can%20help%20a%20company,production%20lags%2C%20which%20are%20expensive.

Bughin, Jacques, et al. "Notes from the AI Frontier: Modeling the Impact of AI on the World Economy." *McKinsey & Company*, McKinsey & Company, 4 Sept. 2018, https://www.mckinsey.com/featured-insights/artificial-intelligence/notes-from-the-AI-frontier-modeling-the-impact-of-ai-on-the-world-economy.

Global, CSU. "Why Is Machine Learning Important?" *Colorado State University Global*, https://csuglobal.edu/blog/why-machine-learning-important.

"How Capitalism Causes Unemployment." Workers Power – Revolutionary Communist Organisation, https://workerspower.uk/how-capitalism-causes-unemployment/.

Joy, Ashwin. "Will Artificial Intelligence Replace Programmers?" *Pythonista Planet*, 5 Mar. 2020, https://pythonistaplanet.com/will-ai-replace-programmers/.

Morgan, Blake. "Why Every Employee at Your Company Should Have Communications Training." *Forbes*, Forbes Magazine, 12 Oct. 2022, https://www.forbes.com/sites/blakemorgan/2018/01/24/why-every-employee-at-your-company-should-have-communications-training/?sh=2e7fb439279d.

Picardo, Elvis. "How the Unemployment Rate Affects Everybody." *Investopedia*, Investopedia, 8 July 2022, https://www.investopedia.com/articles/economics/10/unemployment-rate-get-real.asp.

Povarov, Nikita. "AI for Software Developers: A Future or a New Reality?" *InfoQ*, InfoQ, 20 May 2022, https://www.infoq.com/articles/ai-for-software-developers/.

Sacolick, Isaac. "CHATGPT and Software Development." *InfoWorld*, InfoWorld, 27 Feb. 2023, https://www.infoworld.com/article/3689172/chatgpt-and-software-development.html.

Thomas, Mike. "Robots and Ai Taking over Jobs: What to Know about the Future of Jobs." *Built In*, https://builtin.com/artificial-intelligence/ai-replacing-jobs-creating-jobs.